

CHANGE NOTICE

Affected Document: ICD-GPS-240 Rev C	IRN/SCN Number IRN-ICD-240C-001	Date: 30-SEP-2020
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Authority: RFC-00442	Proposed Change Notice PCN-ICD-240C_RFC442	Date: 07-APR -2020
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CLASSIFIED BY: N/A
DECLASSIFY ON: N/A

Document Title: NAVSTAR GPS Control Segment to User Support Community Interfaces

RFC Title: 2020 Document Proposed Changes

Reason For Change (Driver): For the upcoming 2020 Public ICWG, there is an opportunity to clarify the documents for better understanding such as:

1. The public user community has expressed interest in adding a new clock error rate equation that aids in their calculations.
2. User equations involving time calculations need to be clarified.
3. To improve consistency in IS-GPS-200, clarify that a LNAV TGD value of '10000000' means that the group delay value is unavailable, which aligns with the clarification of CNAV TGD.
4. Administrative clarification and clean-up, identified in past Public ICWGs and as newly-identified changes of administrative nature.

Description of Change:

1. Recommend new SV Clock Relativistic Correction rate equation.
2. Clarify equations by recommending examples or clarifying instructions.
3. Add a statement that clarifies whether a LNAV TGD value of '10000000' indicates that the group delay value in unavailable.
4. Provide clarity and clean up identified administrative changes in all public documents.

Authored By: RE: Dylan Nicholas

Checked By: RE: Kevin Cano

AUTHORIZED SIGNATURES	REPRESENTING	DATE
	PNT Capability Area Integration, Portfolio Architect, Space and Missile Systems Center - LAAFB	
	Department of Homeland Security (DHS), United States Coast Guard (USCG), Navigation Center (NAVCEN)	
	USSF Space Delta 8	

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Interface Control Contractor:
SAIC (GPS SE&I)
200 N. Pacific Coast Highway, Suite 1800
El Segundo, CA 90245

CODE IDENT 66RP1

ICD240-194 :

Section Number :

40.5.0-1

WAS :

Parameters used in the YUMA format are not the same as used in the SEM format. The SEM parameters are the same as defined in IS-GPS-200 and broadcast from an SV. The YUMA angular units are in radians whereas the SEM angular units are in semicircles. In addition, the YUMA Orbital Inclination is a direct measure of inclination angle (approximately 55 degrees), whereas the SEM Inclination Offset is relative to 0.30 semicircles (54 degrees). The parameters of the YUMA almanac are identified within the message structure. Figure 40-2 illustrates one record of 28 in a sample YUMA almanac file. Line one of each record identifies the week in which the file was generated as well as the PRN number of the subject SV.

Redlines :

Parameters used in the YUMA format are not the same as used in the SEM format. -The SEM parameters are the same as defined in IS-GPS-200 and broadcast from an SV.- The YUMA angular units are in radians whereas the SEM angular units are in semicircles. In addition, the YUMA Orbital Inclination is a direct measure of inclination angle (approximately 55 degrees), whereas the SEM Inclination Offset is relative to 0.30 semicircles (54 degrees).- The parameters of the YUMA almanac are identified within the message structure.- Figure 40-2 illustrates one record ~~of 28~~ in a sample YUMA almanac file.- Line one of each record identifies the week in which the file was generated as well as the PRN number of the subject SV.

IS :

Parameters used in the YUMA format are not the same as used in the SEM format. The SEM parameters are the same as defined in IS-GPS-200 and broadcast from an SV. The YUMA angular units are in radians whereas the SEM angular units are in semicircles. In addition, the YUMA Orbital Inclination is a direct measure of inclination angle (approximately 55 degrees), whereas the SEM Inclination Offset is relative to 0.30 semicircles (54 degrees). The parameters of the YUMA almanac are identified within the message structure. Figure 40-2 illustrates one record in a sample YUMA almanac file. Line one of each record identifies the week in which the file was generated as well as the PRN number of the subject SV.

ICD240-195 :

Section Number :

40.5.0-2

WAS :

```
***** Week 175 almanac for PRN-01 *****
ID:                                01
Health:                             000
Eccentricity:                       0.5404472351E-002
Time of Applicability(s):           589824.0000
Orbital Inclination(rad):            -0.7931758961E-008
SQRT(A) (m 1/2):                    5153.727539
Right Ascen at Week (rad):          -0.4069756641E+000
Argument of Perigee(rad):           -1.719371504
```

Figure 40-2 YUMA Almanac Data Sample

Redlines : <Replaced OLE>

IS :

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***** Week 59 almanac for PRN-01 *****
ID:                                01
Health:                             000
Eccentricity:                       0.9913444519E-002
Time of Applicability(s):           503808.0000
Orbital Inclination(rad):            0.9805097338
Rate of Right Ascen(r/s):           -0.7943188009E-008
SQRT(A) (m 1/2):                    5153.577637
Right Ascen at Week(rad):           0.3072393117E+001
Argument of Perigee(rad):            0.782072915
Mean Anom(rad):                     0.1774841613E+001
Af0(s):                              -0.3862380981E-003
Af1(s/s):                           -0.3637978807E-011
week:                                59
```

Figure 40-2 YUMA Almanac Data Sample